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| APPLICATION NO.                                                                                                                          | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/802,816                                                                                                                               | 03/18/2004  | Masahiko Ogino       | 1021.43672X00       | 5867             |
| 20457 7590 11/23/2011<br>ANTONELLI, TERRY, STOUT & KRAUS, LLP<br>1300 NORTH SEVENTEENTH STREET<br>SUITE 1800<br>ARLINGTON, VA 22209-3873 |             |                      |                     |                  |
| EXAMINER                                                                                                                                 |             |                      |                     |                  |
| KHARE, ATUL P                                                                                                                            |             |                      |                     |                  |
| ART UNIT                                                                                                                                 |             | PAPER NUMBER         |                     |                  |
| 1742                                                                                                                                     |             |                      |                     |                  |
| MAIL DATE                                                                                                                                |             | DELIVERY MODE        |                     |                  |
| 11/23/2011                                                                                                                               |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/802,816

**Applicant(s)**

OGINO ET AL.

**Examiner**

ATUL P. KHARE

**Art Unit**

1742

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 3-11 and 25-28 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 3-11 and 25-28 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-800)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed 19 September 2011 has been entered and fully considered.
2. Claims 3-11 and 25-28 are currently pending.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Reconsideration of the subject matter of claim 8 reveals that the specification appears to include support for a curved mold having a thickness imparting flexibility thereto. The rejection of claim 8 under 35 U.S.C. 112, first paragraph, is therefore withdrawn.
5. Claims 7, 9, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is noted that independent claim 5 has been significantly amended since it was first presented in the 18 March 2004

claims. Reconsideration of the specification reveals that there is no description in the specification which reasonably conveys to one skilled in the art that the inventors had possession of the invention of claim 5 *in combination with* the subject matter of instant claims 7 and 9-11. For example, in embodiments where the supporter is used, the mold and supporter are depicted as being flat. There is no indication that Applicants had possession of an embodiment in which the curved base member and mold with a curved surface (see claim 5) was used in combination with a light-transmitting mold (instant claim 7), or a mold secured to a supporter via an elastomer at its edge (instant claims 9-11). The Examiner has considered the cited portions of the specification (see Remarks p.5), but remains of the view that the combinations recited by these claims are not supported by the specification.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
9. Claims 5-8, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673, already of record). For examination, a translation of JP 02305612 will be provided.
10. As to claim 5, Matsuno teaches a nanoimprint mold for deforming a flat resin substrate or a flat resin film on a substrate to form a fine structure on the substrate, wherein the mold is capable of use with a press machine, said mold comprising a laminated structure, said laminated structure including a base member 4 having a curved surface and a pattern member 3 having a concave-convex pattern, said pattern member being bonded to said base member, perimeters of said pattern member and said base member being coextensive, and said mold being provided with a curved surface on the side thereof on which the concave-convex pattern is formed (fig. 1).

Matsuno does not appear to explicitly disclose a central groove extending to the mold's peripheral portions, but Sreenivasan teaches a similar mold having a concave-convex pattern having a groove formed deeper than the concave portions of the pattern, the groove being formed at a center portion of the mold between periphery portions, wherein the groove extends and is open to the periphery portions to implicitly allow air to be introduced into the groove and provide for a release start point for releasing the mold from the resin substrate or flat resin film during use of the mold (figs 20A-B. [0125], MPEP 2112(I-III)). It would have been obvious to incorporate Sreenivasan's teachings into Matsuno for inhibiting the flow of liquid resin between patterning regions of the mold while additionally facilitating release of the mold from the patterned resin (Sreenivasan [0125]).

11. As to claim 6, since peripheral components such as heating and pressing mechanisms do not further limit a mold, the claim is met.
12. As to claim 7, Matsuno does not appear to teach a transparent mold, but Sreenivasan teaches this feature to enable light-curing through the mold ([0007], [0104]), and it would have been obvious to incorporate this feature into Matsuno in order to accomplish the same.
13. As to claim 8, Matsuno teaches a flexible mold (figs. 1-3).
14. As to claim 25, the deep groove of Sreenivasan is configured in the same manner as the claimed mold.
15. As to claim 26, Matsuno does not appear to explicitly disclose the claimed feature size, but Sreenivasan teaches concave or convex portions having a feature size

of less than about 250 nm [0118], and it would have been obvious to incorporate this teaching into modified Matsuno for creating smaller imprint patterns.

16. Claims 3, 4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) as applied to claims 5-8, 25, and 26 above, and further in view of Rowe (US 2,201,302, already of record).

17. As to claims 3 and 4, modified Matsuno does not appear to explicitly disclose an inclined periphery portion of the mold. However, Rowe teaches that it is known to provide a flexible, laminated mold assembly having an inclined periphery, wherein a portion of the center is larger in thickness than the periphery (fig. 4). Rowe suggests that this configuration is chosen merely because the particular embodiment is performed on a spherically concave surface. However, in view of the teachings of Rowe, one would have found it obvious to adjust the stamp configuration to also print on convex surfaces. Once it is recognized that the stamp may be adjusted to print onto concave surfaces, one would have also found it obvious to provide the opposite configuration as recited in instant claim 4. It would have been obvious to incorporate the Rowe teachings into modified Matsuno because Matsuno already teaches the use of a curved mold assembly, and Rowe's teachings would have allowed for catering of the laminated mold assembly to additionally or alternatively print onto a convex or concave surface.

18. As to claims 9 and 10, modified Matsuno does not appear to explicitly disclose the use of a supporter, but Rowe teaches that it is known to provide a flexible mold secured to a support by a substance which is interpreted to be an elastomer (p. 1, right col., line 40) in a circular configuration (fig. 1). It would have been obvious to incorporate Rowe's teachings into modified Matsuno in order to help distribute application pressures uniformly.

19. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) as applied to claims 5-8, 25, and 26 above, and further in view of Chou (US 2002/0132482, already of record).

20. As to claim 6, in the alternative that it is ultimately determined that the claim is not met as outlined above, Sreenivasan teaches a press (fig. 1) and Chou teaches that several means can be used interchangeably to soften or cure the film such as UV and heating ([0027]). It would have been obvious to incorporate the Chou teachings into modified Matsuno since Matsuno teaches heating to cure (p. 10, first full paragraph), and Chou teaches that UV and heat can be used additionally or interchangeably for accomplishing the same [0027].

21. As to claim 11, modified Matsuno does not appear to explicitly disclose an elastomeric edge to facilitate release. However, Chou teaches a peripheral elastomeric gasket which separates the mold from the material to be imprinted (fig. 3, item 32, [0027]). Since the mold would compress into the material to be imprinted (the material



on item 20), which would require compression of the gasket, removal of the mold from the resist would also be assisted by the gasket. It would have been obvious to incorporate the gasket of Chou into the stamp of modified Matsuno in order to allow for imprinting by external fluid pressure.

22. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuno et al. (JP 02305612) in view of Sreenivasan et al. (US 2004/0009673) as applied to claims 5-8, 25, and 26 above, and further in view of JP 9-511710 (already of record), hereinafter '710. For examination, a machine translation of JP 9-511710 has been provided. As to claims 27 and 28, modified Matsuno does not appear to explicitly disclose bonding with an adhesive. However, the '710 document teaches bonding a base member and pattern member with PDMS, which functions as an adhesive and helps to facilitate contact with a coarse or curved surface (Translation p. 3, lines 5-6). It would have been obvious to incorporate the '710 teachings modified Matsuno in order to facilitate contact with a coarse or curved surface.

### ***Response to Arguments***

23. Applicant's arguments filed 19 September 2011 with respect to the rejections under 35 U.S.C. 112, first paragraph, have been fully considered but they are not persuasive. The arguments appear to be on the grounds that claims 7-11 are supported by the original specification and especially at p. 3 line 17 to p. 4 line 5.

Reconsideration of the subject matter of claim 8 reveals that the specification appears to include support for manufacturing a nickel mold of a thickness imparting flexibility thereto. The rejection of claim 8 under 35 U.S.C. 112, first paragraph, is therefore withdrawn. However, the rejections of claims 7 and 9-11 under 35 U.S.C. 112, first paragraph are maintained. As outlined in the rejections, the specification does not provide sufficient support for the combination of the claimed features.

24. Applicant's arguments with respect to the rejections of claims 3-11 and 25-28 under 35 U.S.C. 103(a) have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ATUL P. KHARE whose telephone number is (571)270-7608. The examiner can normally be reached on Monday-Thursday 7:30 a.m. - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571)272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ATUL P. KHARE/  
Examiner, Art Unit 1742

/Christina Johnson/  
Supervisory Patent Examiner, Art Unit 1742